

# Outcomes Assessment

Student Learning Outcomes and Degree Program Objectives



**CAL POLY**

Construction Management

COLLEGE OF ARCHITECTURE  
& ENVIRONMENTAL DESIGN

## **PLO# 17. Understand the basic principles of HVAC, electrical, and plumbing systems.\***

### Assessment Measure Summary Results

| Assessment Measure 1: Exam Questions |                                                                                                                                                                                    | MEETS TARGET |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Type:                                | Direct Measure                                                                                                                                                                     |              |
| Course & Assignment:                 | CM 411 (Specialty Contracting Construction Management); Embedded questions in quiz                                                                                                 |              |
| Goal:                                | 100% of students answer 70% of the questions correctly                                                                                                                             |              |
| Date(s) of OAM reviews:              | June 2024 (AY 2023-2024)<br>June 2025 (AY 2024-2025)<br>June 2026 (AY 2025-2026)                                                                                                   |              |
| Results:                             | Students' average score is 80% on assessments in AY 2023-2024<br>93% of students achieved 80% or higher in AY 2024-2025<br>100% of students achieved 80% or higher in AY 2025-2026 |              |
| Revisions made to instrument:        | None.                                                                                                                                                                              |              |
| Actions Taken and Results:           |                                                                                                                                                                                    |              |
| Recommendations for Improvement:     |                                                                                                                                                                                    |              |

| Assessment Measure 2: Survey – Graduating Seniors |                                                                                                                                                                                                                                                                                     | GOAL PARTIALLY MET |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Type:                                             | Indirect Measure                                                                                                                                                                                                                                                                    |                    |
| Goal:                                             | 80% of students rate their ability as good and above.                                                                                                                                                                                                                               |                    |
| Dates of OAM reviews:                             | June 2021 (for AY 2020-2021); June 2024 (for AY 2023-2024); June 2025 (for AY 2024-2025); June 2026 (for AY 2025-26)                                                                                                                                                                |                    |
| Results:                                          | June 2021: 71% of students rated abilities as good or above (n=52)<br>June 2024: 88% of students rated abilities as good or above (n=59)<br>June 2025: 89% of students rated abilities as good or above (n=9)<br>June 2026: 80% of students rated abilities as good or above (n=20) |                    |
| Actions Taken:                                    | Student-led senior projects collected qualitative data using focus groups to get additional insights (June 2024 and June 2025).                                                                                                                                                     |                    |
| Recommendations for Improvement:                  | Work with ASCM student club to increase response rates.                                                                                                                                                                                                                             |                    |

| Assessment Measure 3: Survey – Industry Employer |                                                                                        | GOAL MET |
|--------------------------------------------------|----------------------------------------------------------------------------------------|----------|
| Type:                                            | Indirect Measure                                                                       |          |
| Goal:                                            | 50% of employers rate students' abilities as good and above.                           |          |
| Dates of OAM reviews:                            | June 2021 (for AY 2020-21); June 2024 (for AY 2023-2024); June 2026 (for AY 2025-2026) |          |

Outcomes Assessment Report

**PLO 17: MEP**

Date of Report: July 2026

*\*Previously PLO Number 20. The number was adjusted when original PLOs 7 (documents), 9 (multi-disciplinary skills), and 13 (risk management) were removed from the original required PLO assessment measures.*

*As prescribed in Section 8.5.1 and 9.4.1 of ACCE Document 103, Standards and Criteria for the Accreditation of Construction Education Programs*

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|                                  |                                                                                                                                                                                                                   |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Results:                         | June 2021: 90% of employers rated abilities as good or above (n=21)<br>June 2024: 89% of employers rated abilities as good or above (n=19)<br>June 2026: 86% of employers rated abilities as good or above (n=30) |
| Actions Taken:                   | Advertising survey at annual CMAC meeting to increase response rate                                                                                                                                               |
| Recommendations for improvement: | Survey lacks consistent responses; work with CMAC Committee to determine ways to increase response rates.                                                                                                         |

| Assessment Measure 4: AIC Exam   |                                                                                                                                                                   | GOAL MET |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Type:                            | Indirect Measure                                                                                                                                                  |          |
| Goal:                            | The department's performance is better than the national average.                                                                                                 |          |
| Dates of OAM review:             | Fall 2021, Spring 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024, Fall 2024, Spring 2026                                                                    |          |
| Results:                         | 100% of students outperformed the national average on each exam (Fall 2021, Spring 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024, Fall 2024, Spring 2026). |          |
| Actions Taken:                   | None                                                                                                                                                              |          |
| Recommendations for Improvement: | None                                                                                                                                                              |          |

### Method of Assessment:

This assessment evaluates students' understanding of mechanical systems using questions developed and approved by a team of faculty.

### Actions taken:

#### Direct Assessment Measure:

The assessment measure is still considered appropriate, and the location for the assessment is appropriate.

### Discussion:

No changes have been made to the Electrical approach. HVAC and Fluids M & P shop lab tours on campus continued as previously established, and the existing project assignment was maintained. Minor adjustments were implemented for Mechanical and Plumbing, with increased emphasis on plan reading assignments and reduced focus on design activities. These modifications were informed by feedback from the Advisory Council. The curriculum continues to emphasize Learn-by-Doing through homework assignments, project assignments, hands-on lab exercises, tours of MEP installations both on and off campus, and visits to campus engineering laboratories.

During this review cycle, one of the lead faculty who collected outcomes assessment data retired, and their results were lost. The OA committee has transitioned to an online shared document for outcomes assessment reporting to ensure data collection, integrity, and record keeping in the event of staffing changes.

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## Recommendations for Improvement:

Starting in Fall 2026, we will transition to a semester-based curriculum. The revised curriculum has increase MEP classes, which should result in increased MEP understanding. It will be important for faculty teaching these classes to review the outcomes assessment goals and results to continue to improve student learning for MEP systems. For the semester-converted course, the extended version of the current CM 411 will allow far more material to be covered, and include additional hands-on activities, labs, campus Mechanical and Plumbing shop tours, and more site field trips.

## Additional Data for Outcomes Assessment Measures:

### Assessment Measure 1: Embedded Quiz Questions

| Quarter     | Number of CM students who completed the assessment | Number of CM students who achieved a score of 70% or better | Percent of students with 80% or more |
|-------------|----------------------------------------------------|-------------------------------------------------------------|--------------------------------------|
| Fall 2024   | 22                                                 | 22                                                          | 100%                                 |
| Fall 2024   | 25                                                 | 25                                                          | 100%                                 |
| Winter 2025 | 24                                                 | 21                                                          | 88%                                  |
| Winter 2025 | 21                                                 | 20                                                          | 95%                                  |
| Spring 2025 | 23                                                 | 21                                                          | 91%                                  |
| Spring 2025 | 23                                                 | 20                                                          | 87%                                  |
| Fall 2025   | 24                                                 | 24                                                          | 100%                                 |
| Fall 2025   | 20                                                 | 20                                                          | 100%                                 |
| Winter 2026 | 24                                                 | 24                                                          | 100%                                 |
| Winter 2026 | 22                                                 | 22                                                          | 100%                                 |

### Assessment Measure 2: Survey – Graduating Seniors

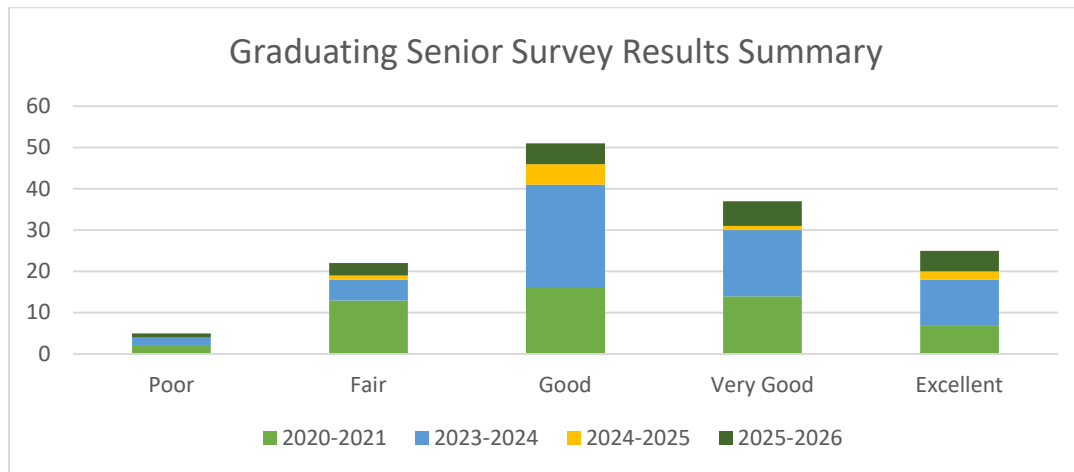
| Rating                      | 2020-2021 | 2023-2024 | 2024-2025 | 2025-2026 |
|-----------------------------|-----------|-----------|-----------|-----------|
| Poor                        | 2         | 2         | 0         | 1         |
| Fair                        | 13        | 5         | 1         | 3         |
| Good                        | 16        | 25        | 5         | 5         |
| Very Good                   | 14        | 16        | 1         | 6         |
| Excellent                   | 7         | 11        | 2         | 5         |
| Total Responses             | 52        | 59        | 9         | 20        |
| Total - Good or Better      | 37        | 52        | 8         | 16        |
| Percentage - Good or Better | 71%       | 88%       | 89%       | 80%       |

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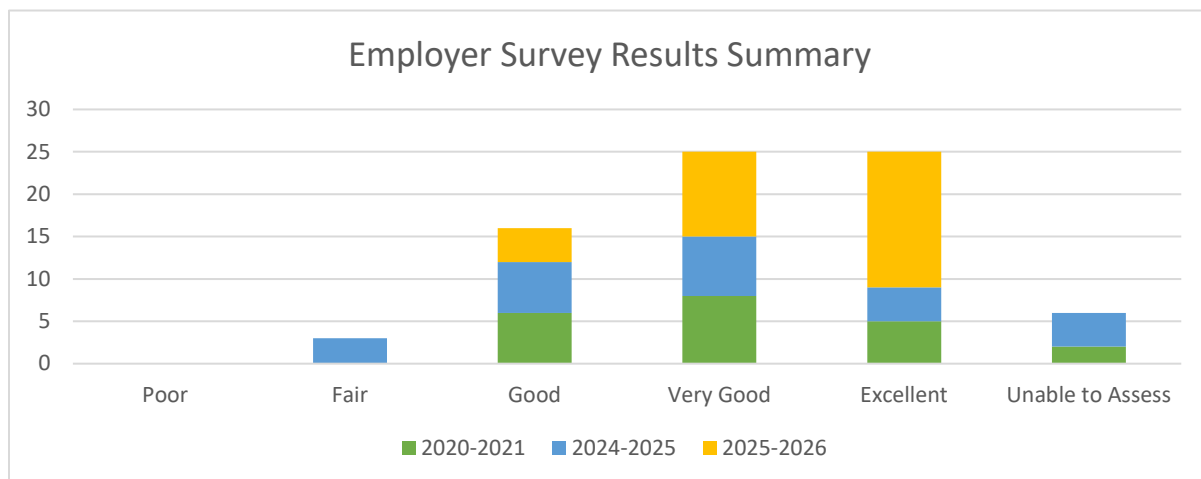


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## Assessment Measure 3: Survey – Industry Employers

| Rating                                                               | 2020-2021 | 2024-2025 | 2025-2026 |
|----------------------------------------------------------------------|-----------|-----------|-----------|
| Poor                                                                 | 0         | 1         | 1         |
| Fair                                                                 | 2         | 1         | 3         |
| Good                                                                 | 7         | 11        | 6         |
| Very Good                                                            | 11        | 4         | 6         |
| Excellent                                                            | 0         | 1         | 12        |
| Unable to Assess                                                     | 1         | 1         | 2         |
| Total Responses                                                      | 21        | 19        | 30        |
| Total - Good or Better                                               | 18        | 16        | 24        |
| Percentage - Good or Better<br>(excludes unable to assess responses) | 90%       | 89%       | 86%       |



## Assessment Measure 4: AIC Exam Results Summary:

Note that the AIC exam did not report results for PLO 17 in Spring 2025 and Fall 2025.

### AIC Exam Results - PLO No.17

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**PLO 17: MEP**

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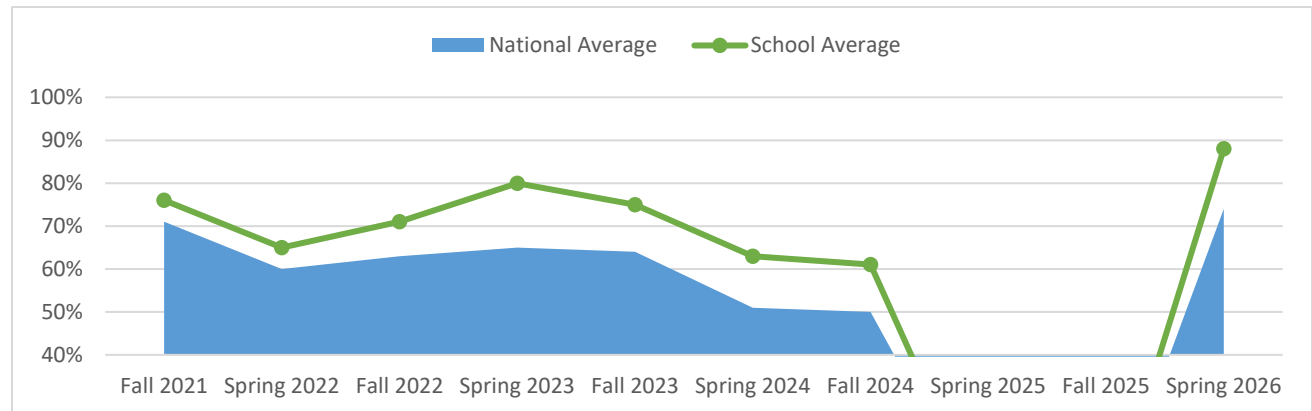
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|                  | Fall<br>2021 | Spring<br>2022 | Fall<br>2022 | Spring<br>2023 | Fall<br>2023 | Spring<br>2024 | Fall<br>2024 | Spring<br>2025 | Fall<br>2025 | Spring<br>2026 |
|------------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|
| School Average   | 76%          | 65%            | 71%          | 80%            | 75%          | 63%            | 61%          | 0%             | 0%           | 88%            |
| National Average | 71%          | 60%            | 63%          | 65%            | 64%          | 51%            | 50%          | 0%             | 0%           | 74%            |



\*Previously PLO Number 19. The number was adjusted when original PLOs 7 (documents), 9 (multi-disciplinary skills), and 13 (risk management) were removed from the original required PLO assessment measures.